

Listing of Claims:

1. (Currently Amended) A method for automated tool management comprising the steps of:

receiving a first message in a first selected protocol from a first client application, wherein said first message comprises a first request to perform a first action on a first tool;

extracting a first pointer from the contents of said first message in order to identify a first object in an equipment model, wherein said first message identifies a first object in an equipment model, wherein said equipment model comprises a logical representation of said first tool;

invoking a first procedure method of said first object in response to said first message;

transferring a first return value to said first client application, wherein said first return value is associated with said first action;

receiving a second message in a second selected protocol from a second client application, wherein said second message comprises a second request to perform a second action on said first tool;

extracting a second pointer from the contents of said second message in order to identify said first object in said equipment model, wherein said second message identifies a second object in said equipment model, wherein said second selected protocol is different than said first selected protocol;

invoking a second procedure method of said first ~~second~~ object in response to said second message; and

transferring a second return value to said second client application, wherein said second return value is associated with said second action.

2. (Currently Amended) The method as recited in Claim 1, wherein said first message further comprises data and wherein said step of invoking passes said data to said first procedure method.

3. (Previously Presented) The method as recited in Claim 1, wherein if said first request comprises a request for data and if said first tool is an asynchronous source of said data, then the method further comprises the steps of:

if valid information exists corresponding to said data, creating said first return value based on said valid information;

if valid information does not exist corresponding to said data, creating said first return value based on a database of said equipment model;

incorporating said first return value into a return message to said first client application;  
and

transferring said return message in said selected protocol to said client application in response to an address provided by said client application.

4. (Previously Presented) The method as recited in Claim 1, wherein if said first request comprises a request for data and if said first tool is a synchronous source of said data, then the method further comprises the steps of:

retrieving information from said first tool;

creating said first return value based on said information;

incorporating said first return value into a return message to said first client application;  
and

transferring said return message in said first selected protocol to said first client application in response to an address provided by said first client application.

5. (Canceled)

6. (Previously Presented) The method as recited in Claim 1, wherein if said first request comprises a request for data and if said first tool is not one of an asynchronous source of said data and a synchronous source of said data then the method further comprises the steps of:

creating said first return value based on a database of said equipment model;

incorporating said first return value into a return message to said first client application;  
and

transferring said return message in said first selected protocol to said first client application in response to an address provided by said first client application.

7. (Canceled)

8. (Previously Presented) The method as recited in Claim 1, wherein said first protocol and said second protocol comprise protocols selected from the following: Component Object Model (COM), Remote Method Invocation (RMI), CORBA, Simple Object Access Protocol (SOAP), SECS, GEM, HyperText Markup Language (HTML), Extensible Markup Language (XML).

9. (Currently Amended) The method as recited in Claim 1, wherein said first procedure method of said first object is invoked to remotely access and electronically diagnose said first tool.

10. (Previously Presented) The method as recited in Claim 2, wherein said data in said message is notification data.

11. (Currently Amended) A computer program product having a computer readable storage medium having computer program logic recorded thereon for automated tool management, comprising:

programming operable for receiving a first message in a first selected protocol from a first client application, wherein said first message comprises a first request to perform a first action on a first tool;

programming operable for extracting a first pointer from the contents of said first message to identify a first object in an equipment model, wherein said first message identifies a first object in an equipment model, wherein said equipment model comprises a logical representation of said first tool;

programming operable for invoking a first procedure method of said first object in response to said first message; and

programming operable for transferring a first return value to said first client application, wherein said first return value is associated with said first action;

programming operable for receiving a second message in a second selected protocol from a second client application, wherein said second message comprises a second request to perform a second action on said first tool;

programming operable for extracting a second pointer from the contents of said second message to identify said first object in said equipment model, wherein said second message

~~identifies a second object in said equipment model,~~ wherein said second selected protocol is different than said first selected protocol;

programming operable for invoking a second procedure method of said first second object in response to said second message; and

programming operable for transferring a second return value to said second client application, wherein said second return value is associated with said second action.

12. (Currently Amended) The computer program product as recited in Claim 11, wherein said first message comprises data and further comprising: programming operable for passing said data to said first procedure method.

13. (Previously Presented) The computer program product as recited in Claim 11, wherein if said first request comprises a request for data and if said first tool is an asynchronous source of said data, then the computer program product further comprises:

if valid information exists corresponding to said data, programming operable for creating said first return value based on said valid information;

if valid information does not exist corresponding to said data, programming operable for creating said first return value based on a database of said equipment model;

programming operable for incorporating said first return value into a return message to said first client application; and

programming operable for transferring said return message in said selected protocol to said client application in response to an address provided by said client application.

14. (Previously Presented) The computer program product as recited in Claim 11, wherein if said first request comprises a request for data and if said first tool is a synchronous source of said data, then the computer program product further comprises:

programming operable for retrieving information from said first tool

creating said first return value based on said information;

incorporating said first return value into a return message to said first client application;  
and

programming operable for transferring said return message in said first selected protocol to said first client application in response to an address provided by said first client application.

15. (Canceled)

16. (Previously Presented) The computer program product as recited in Claim 11, wherein if said first request comprises a request for data and if said first tool is not one of an asynchronous source of said data and a synchronous source of said data then the computer program product further comprises:

programming operable for creating said first return value based on a database of said equipment model;

programming operable for incorporating said first return value into a return message to said first client application; and

programming operable for transferring said return message in said first selected protocol to said first client application in response to an address provided by said first client application.

17. (Canceled)

18. (Previously Presented) The computer program product as recited in Claim 11, wherein said first protocol and said second protocol comprise protocols selected from the following: Component Object Model (COM), Remote Method Invocation (RMI), CORBA, Simple Object Access Protocol (SOAP), SECS, GEM, HyperText Markup Language (HTML), Extensible Markup Language (XML).

19. (Currently Amended) The computer program product as recited in Claim 11, wherein said first procedure method of said first object is invoked to remotely access and electronically diagnose said first tool.

20. (Previously Presented) The computer program product as recited in Claim 12, wherein said data in said message is notification data.

21. (Currently Amended) A system, comprising: a processor; a memory unit storing a computer program operable for storing a computer program operable for automated tool management; and a bus system coupling the processor to the memory, wherein the computer program is operable for performing the following programming steps:

receiving a first message in a first selected protocol from a first client application, wherein said first message comprises a first request to perform a first action on a first tool;

extracting a first pointer from said first message to identify a first object in an equipment model, ~~wherein said first message identifies a first object in an equipment model,~~ wherein said equipment model comprises a logical representation of said first tool;

invoking a first procedure ~~method~~ of said first object in response to said first message; and

transferring a first return value to said first client application, wherein said first return value is associated with said first action;

receiving a second message in a second selected protocol from a second client application, wherein said second message comprises a second request to perform a second action on said first tool;

extracting a second pointer from said second message to identify said first object in said equipment model, ~~wherein said second message identifies a second object in said equipment model,~~ wherein said second selected protocol is different than said first selected protocol;

invoking a second procedure ~~method~~ of said first ~~second~~ object in response to said second message; and

transferring a second return value to said second client application, wherein said second return value is associated with said second action.

22. (Currently Amended) The system as recited in Claim 21, further characterized in that said first message comprises data and the computer program is operable for passing said data to said first procedure ~~method~~ in said step of invoking.

23. (Previously Presented) The system as recited in Claim 21, wherein if said first request comprises a request for data and if said first tool is an asynchronous source of said data, then the computer program is further operable for performing the following programming steps:

if valid information exists corresponding to said data, creating said first return value based on said valid information;

if valid information does not exist corresponding to said data, creating said first return value based on a database of said equipment model;

incorporating said first return value into a return message to said first client application;  
and

transferring said return message in said selected protocol to said client application in response to an address provided by said client application.

24. (Previously Presented) The system as recited in Claim 21, wherein if said first request comprises a request for data and if said first tool is a synchronous source of said data, then the computer program is further operable for performing the following programming steps:

retrieving information from said first tool;

creating said first return value based on said information;

incorporating said first return value into a return message to said first client application;  
and

transferring said return message in said first selected protocol to said first client application in response to an address provided by said first client application.

25. (Canceled)

26. (Previously Presented) The system as recited in Claim 21, wherein if said first request comprises a request for data and if said first tool is not one of an asynchronous source of said data and a synchronous source of said data then the computer program is further operable for performing the following programming steps:

creating said first return value based on a database of said equipment model;

incorporating said first return value into a return message to said first client application;  
and

transferring said return message in said first selected protocol to said first client application in response to an address provided by said first client application.

27. (Canceled)

28. (Previously Presented) The system as recited in Claim 21, wherein said first protocol and said second protocol comprise protocols selected from the following: Component Object Model (COM), Remote Method Invocation (RMI), CORBA, Simple Object Access Protocol (SOAP), SECS, GEM, HyperText Markup Language (HTML), Extensible Markup Language (XML).

29. (Currently Amended) The system as recited in Claim 21, wherein said first procedure method of said first object is invoked to remotely access and electronically diagnose said first tool.

30. (Previously Presented) The system as recited in Claim 22, wherein said data in said message is notification data.

31. (Previously Presented) The method as recited in Claim 1 further comprising the steps of:  
generating a security wrapper layer, wherein said security wrapper layer provides a layer of protection to said equipment model; and

creating a security wrapper object in said security wrapper layer, wherein a pointer to a corresponding equipment model object is stored in said security wrapper object.

32. (Previously Presented) The method as recited in Claim 31, wherein if said corresponding equipment model object is said object corresponding to said first request then a pointer to said corresponding security wrapper object is transferred to said first client application.

33. (Previously Presented) The method as recited in Claim 32 further comprising the step of: determining if said first selected action on said first tool can be performed in response to access rules stored in said corresponding security wrapper object.

34. (Currently Amended) The method as recited in Claim 33, wherein if said first selected action on said first tool can be performed then the method further comprises the step of: invoking a procedure method by said corresponding security wrapper object to perform said first selected action.

35. (Previously Presented) The computer program product as recited in Claim 11 further comprising:

programming operable for generating a security wrapper layer, wherein said security wrapper layer provides a layer of protection to said equipment model; and



programming operable for creating a security wrapper object in said security wrapper layer, wherein a pointer to a corresponding equipment model object is stored in said security wrapper object.

36. (Previously Presented) The computer program product as recited in Claim 35, wherein if said corresponding equipment model object is said first object corresponding to said first request then a pointer to said corresponding security wrapper object is transferred to said first client application.

37. (Previously Presented) The computer program product as recited in Claim 36 further comprises: programming operable for determining if said first selected action on said first tool can be performed in response to access rules stored in said corresponding security wrapper object.

38. (Currently Amended) The computer program product as recited in Claim 37, wherein if said first selected action on said first tool can be performed then the computer program product further comprises: programming operable for invoking a procedure ~~method~~ by said corresponding security wrapper object to perform said first requested action.

39. (Previously Presented) The system as recited in Claim 21, wherein the computer program is further operable for performing the following programming steps:

generating a security wrapper layer, wherein said security wrapper layer provides a layer of protection to said equipment model; and

creating a security wrapper object in said security wrapper layer, wherein a pointer to a corresponding equipment model object is stored in said security wrapper object.

40. (Previously Presented) The system as recited in Claim 39, wherein if said corresponding equipment model object is said first object corresponding to said first request then a pointer to said corresponding security wrapper object is transferred to said first client application.

41. (Previously Presented) The system as recited in Claim 40, where the computer program is further operable for performing the following programming step: determining if said first selected action on said first tool can be performed in response to access rules stored in said corresponding security wrapper object.

42. (Previously Presented) The system as recited in Claim 41, wherein if said first selected action on said first tool can be performed then the computer program is further operable for performing the following programming step: invoking a procedure ~~method~~ by said corresponding security wrapper object to perform said first selected action.

43. (Previously Presented) The method as recited in Claim 1, wherein said step of receiving a first message and said step of transferring a first return value are performed by an application interface unit, wherein said application interface unit interfaces said first client application with said equipment model.

44. (Previously Presented) The method as recited in Claim 4, wherein said step of retrieving information from said first tool is performed by a tool interface unit, wherein said tool interface unit interfaces said first tool with said equipment model.

45. (Previously Presented) The computer program product as recited in Claim 11, wherein said programming operable for receiving a first message and said programming operable for transferring a first return value are implemented by an application interface unit, wherein said application interface unit interfaces said client application with said equipment model.

46. (Previously Presented) The computer program product as recited in Claim 14, wherein said programming operable for retrieving information from said first tool is implemented by a tool interface unit, wherein said tool interface unit interfaces said first tool with said equipment model.

47. (Previously Presented) The system as recited in Claim 21, wherein said step of receiving a first message and said step of transferring a first return value are performed by an application interface unit, wherein said application interface unit interfaces said client application with said equipment model.

48. (Previously Presented) The system as recited in Claim 24, wherein said step of retrieving information from said first tool is performed by a tool interface unit, wherein said tool interface unit interfaces said first tool with said equipment model.

49-51. (Canceled)

52. (Currently Amended) The method as recited in Claim 1, further comprising:

receiving a third message in said first selected protocol from said first client application, wherein said third message comprises a third request to perform a third action on a second tool, wherein said third message identifies a second ~~third~~ object in an equipment model, wherein said equipment model comprises a logical representation of said second tool;

invoking a third procedure ~~method~~ of said second ~~third~~ object in response to said third message;

transferring a third return value to said first client application, wherein said third return value is associated with said third action.

53. (Currently Amended) The computer program product as recited in Claim 11, further comprising:

programming operable for receiving a third message in said first selected protocol from said first client application, wherein said third message comprises a third request to perform a third action on a second tool, wherein said third message identifies a second ~~third~~ object in an equipment model, wherein said equipment model comprises a logical representation of said second tool;

programming operable for invoking a third procedure ~~method~~ of said second ~~third~~ object in response to said third message; and

programming operable for transferring a third return value to said first client application, wherein said third return value is associated with said third action.

54. (Currently Amended) The system as recited in Claim 21, wherein the computer program is further operable for performing the following programming steps:

receiving a third message in said first selected protocol from said first client application, wherein said third message comprises a third request to perform a third action on a second tool, wherein said third message identifies a second ~~third~~ object in an equipment model, wherein said equipment model comprises a logical representation of said second tool;

invoking a third procedure ~~method~~ of said second ~~third~~ object in response to said third message; and

transferring a third return value to said first client application, wherein said third return value is associated with said first action.